The Botulinum Toxin Experience

Results of a Patient Self-Report Questionnaire

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ABSTRACT

There are several words in our current vernacular that reliably elicit powerful cognitive, visual, and emotional reactions in the populace. Undoubtedly, "Botox™" is one of them. Beyond issues regarding the safety of the molecule, there are controversies surrounding the overall legitimacy of the cosmetic use of botulinum toxin type A-1. Many people question whether the cosmetic use of botulinum toxin type A-1 is a "legitimate" medical procedure versus a cosmetic indulgence. The authors report data obtained from a patient self-report questionnaire designed to assess positive or negative changes in feelings and functional status after botulinum toxin type A-1 treatment of the forehead and glabellar region. The authors developed concrete, succinct, and pointed questions pertaining to spheres of function (i.e., work, social, family, intrapsychic, and intimate functioning). Results of this pilot study serve as a persuasive preliminary database to argue that botulinum toxin therapy is more than simply an indulgence therapy.
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There are several words in our current vernacular that reliably elicit powerful cognitive, visual, and emotional reactions in the populace. Undoubtedly, "Botox™" is one of them. When some people hear the word "Botox," they imagine frozen, over-treated, and emotionless faces; while others imagine relaxed, youthful, beautiful, joyful, and seemingly stress-free faces. Perceptions, cognitions, and emotions of the lay public are manipulated by sources offering admonitions against injecting a lethal poison into the body and prominent media "stories" of bad outcomes.[1] These admonitions and stories are often interwoven with diametrically opposed descriptions of botulinum toxin as a harmless, purified protein that is painlessly injected and produces happier and better functioning individuals. How do people assimilate and balance so much contradictory information and proceed to make good choices?

Beyond issues regarding the safety of the molecule, there are controversies surrounding the overall legitimacy of the cosmetic use of botulinum toxin type A-1. Few would argue that the positive images of successful botulinum toxin treatment are tantalizing and hold some level of appeal to all who are treading somewhere along the long and slippery slope of stressful living and aging (euphemistically described as their "emerging social and biologic maturity"). However, many people question whether the cosmetic use of botulinum toxin type A-1 is a "legitimate" medical procedure. Is botulinum toxin treatment simply a "cosmetic indulgence" or "frivolous self-indulgence?"[2] Or, in contrast, is it in fact a legitimate medical intervention that is more often than not an emotionally, functionally, and financially beneficial intervention? This is an exceedingly important question when considering the so-called "dollar value" of an expenditure during this, or any, economy. Thus, there clearly is a need to buttress the existing database regarding the emotional and functional effects of botulinum toxin treatment.

The authors believe that the addition of legitimately obtained data assessing patient satisfaction following botulinum toxin type A-1 treatment is needed in the

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APPENDIX 1: Botox Cosmetic Outcome Questionnaire

Date: _____
City/Country of residence: _____
Number of previous Botox treatments: _____
Last treatment: _____

Please circle the response that best describes how you feel.

Since my Botox treatment, I find that I am in general…

1. Less anxious	More anxious	No change
2. More optimistic	Less Optimistic	No change
3. More energetic	Less energetic	No change
4. Eating more healthy food	Eating less healthy food	No change
5. Happier	Sadder	No change
6. Exercising more	Exercising less	No change
7. Less irritable	More irritable	No change
8. More amorous	Less amorous	No change
9. More social	Less social	No change
10. More productive	Less productive	No change
11. More focused	Less focused	No change
12. Less tired	More tired	No change
13. Less angry	More angry	No change
14. More confident	Less confident	No change
15. More sexually confident	Less sexually confident	No change
16. More assertive	Less assertive	No change
17. More argumentative	Less argumentative	No change
18. More comfortable with others	Less comfortable with others	No change
19. More likely to go out	Less likely to go out	No change
20. More involved in comm. activities	Less involved in community activities	No change
21. Doing better at work/school	Doing worse at work/school	No change
22. More in control	Less in control	No change
23. Taking more medications	Taking less medications	No change
24. Less depressed	More depressed	NA
25. Seen by others as less stressed	Seen by others as more stressed	No change
26. Feeling more attractive	Feeling less attractive	No change
27. More relaxed	Less relaxed	No change

literature. They define satisfaction in this context as "the emotional and functional outcomes obtained after cosmetic botulinum toxin type A-1 treatments" that are performed by appropriately trained clinicians. Our goal is to provide self-report data that can provide individuals, who are free of severe psychopathology, with reasonable and realistic expectations regarding the potential benefits of botulinum toxin treatment.

There is existing data that cosmetic interventions can result in positive emotional changes. A 1998 study examining the emotional and functional impact of alpha hydroxy acid use found that patients who used a 10% glycolic acid lotion on the face for 12 weeks experienced improvements in fine lines, texture, and dyspigmentation. In addition, they reported feeling happier in general, feeling more satisfied with their bodies, and experiencing more sexual satisfaction.[3] The interpretation of the "beyond the skin" benefits was that the improvements in appearance achieved with the topical product allayed the ubiquitous human anxieties regarding the relentless deterioration in appearance that accompanies aging. Even modest improvements in skin appearance seemed reassuring, allowing for a cognitive-emotional interpretation that all is not inevitably "downhill." The associated relief and visual reassurance was probably emotionally liberating leading to more joyful embracement of life and love.

With regard to botulinum toxin type A-1, studies using the Facial Lines Outcome Questionnaire found that patients were satisfied with botulinum toxin treatments and perceived themselves as appearing younger than their chronological age (Facial Line Outcomes [FLO] Questionnaire, Self-Perception of Age [SPA], and FLO-7 [Copyright, 2003, 2005, Allergan, Inc.]). Another study using the Freiburg questionnaire on aesthetic dermatology and cosmetic surgery found

that more than 80 percent of the patients answered that the treatment had been beneficial to them. All patients would recommend treatment completely or mostly. Only a very small number of the patients were moderately stressed by the treatment (data on file, Allergan, Inc.).

Another study entitled, "Satisfaction of Patients After Treatment with Botulinum Toxin for Dynamic Facial Lines," found that injections with botulinum toxin type A was a satisfying and well-tolerated treatment of dynamic facial lines for all patients in this pilot study.[4]

In a recent article, Carruthers et al suggested that patients treated with botulinum toxin appear happier. A personal communication with Dr. Carruthers further substantiated our shared perceptions that treatment with botulinum toxin appears to genuinely affect the individual's emotional and functional status in a very positive manner.[2]

Several recent studies suggest that botulinum toxin type A treatment may actually affect our internal emotional states as well as how others perceive and react to us. Finn et al suggested that the face is the focus of human interactions, and facial appearance profoundly affects self-esteem.[5] The authors stated that facial expressions are regarded as central in the communication of emotions as well as in signaling characteristics, such as age. The repeated expression of emotions produces hyperfunctional facial lines, and the presence of these lines when the face is at repose may give an erroneous impression of emotions or personality characteristics. These lines are also perceived as a sign of aging. The authors concluded that treatment of hyperfunctional facial lines is beneficial for patients who believe that their faces are not communicating their emotions properly, want to delay the outward appearance of aging, or simply want to look their best.

A study in June 2008 by Alam et al put forth a convincing argument that patients who look better may actually feel happier—an extrapolation of the facial feedback hypothesis.[6] This was based on the social psychology literature that examines facial feedback: Specifically, the authors postulated that viewing our own tense and distressed expressions on our faces can lead to internal feelings of distress. In contrast, viewing the more relaxed and less stressed appearance of the botulinum toxin-treated face can potentially elicit more positive internal changes, leading to greater feelings of happiness.

The facial feedback hypothesis suggests that muscular manipulations that result in more positive facial expressions may lead to more positive emotional states in affected individuals. In this paper, the authors hypothesize that the injection of botulinum toxin for upper face dynamic creases might induce positive emotional states by reducing the ability to frown and create other negative facial expressions. The use of botulinum toxin to pharmacologically alter upper face muscular expressiveness may curtail the appearance of negative emotions, most notably anger, but also fear and sadness. This occurs via the relaxation of the corrugator supercilii and the procerus, which are responsible for brow furrowing, and to a lesser extent, because of the relaxation of the frontalis. Concurrently, botulinum toxin may dampen some positive expressions like the true smile, which requires activity of the orbicularis oculi, a muscle also relaxed after toxin injections to lateral fibers of the orbicularis oculi. On balance, the evidence suggests that botulinum toxin injections for upper face dynamic creases may reduce negative facial expressions more than they reduce positive facial expressions. Based on the facial feedback hypothesis, this net change in facial expression may potentially have the secondary effect of reducing the internal experience of negative emotions, thus making patients feel less angry, sad, and fearful.

In another study looking at botulinum toxin and depression, Finzi and Wasserman treated 10 dermatological patients who had proven unresponsive to antidepressant medication with botulinum toxin. All patients noted amelioration of their depression after botulinum toxin treatment.[7] The author cautions overzealous interpretation of the data, but does suggest a facial feedback component may be a contributing factor.

The purpose of this study was to determine, by patient self report, whether any positive or negative changes in feelings and functional status occurred after botulinum toxin type A-1 treatment. Emotional states and functional status questions chosen for assessment were derived from those addressed by existing quality-of-life instruments[8,9] as well as those selected by the authors believe to reflect important areas of daily function. The authors developed concrete, succinct, and pointed questions pertaining to spheres of function (i.e., work, social, family, intrapsychic, and intimate).

METHODS

Seventy-six female patients from two community-based dermatology centers (Bucks County, Pennsylvania and Spokane, Washington) were enrolled for evaluation. Subjects were asked to complete the botulinum toxin outcome self-report questionnaire (Appendix 1) at their routine return visit for additional botulinum toxin treatment after their first treatment. Patients were consecutively enrolled without any known selection bias. They were given the questionnaire by a medical assistant or aesthetician and asked to circle one of three possible answers that best approximated their response to botulinum toxin treatment. Study patients were elicited on a nonrandomized basis. Questionnaires were given to patients by a medical assistant or aesthetician to be completed in the office before or after their treatment. No preselection process was employed. Patients received no remuneration or other incentive to complete the questionnaire. No identifying data was placed on the study instrument other than the age, county of residence, and number of botulinum toxin treatments. The data was tallied by a blinded data analyst.

RESULTS

	MORE	LESS	NO CHANGE
More/less attractive	83%	0%	17%
More/less confident	59%	0%	41%
More/less stressed	50%	0%	50%
More/less happy	49%	0%	51%
More/lessoptimistic	49%	0%	51%
More/less relaxed	36%	0%	64%
More/less comfortable with others	33%	0%	67%
More/less anxious	29%	0%	71%
More/less social	26%	0%	74%
More/less sexually confident	26%	0%	74%
More/less likely to go out	25%	0%	75%
More/less assertive	22%	0%	78%
More/less depressed	18%	0%	82%

CONCLUSION

The results of this pilot study serve as a persuasive, preliminary database to argue that botulinum toxin therapy is more than simply an indulgence therapy. The observed emotional and functional changes certainly have the potential to improve the intrapsychic world and "marketability" of the individual in today's stressful and competitive world.

No patients in the study reported any negative outcomes or worsening of their emotional states. This data buttresses the existing data suggesting that treatment with botulinum toxin does indeed improve more than only the objective appearance of the individual. Whether the obtained benefits were a result of the facial feedback hypothesis, social feedback, or response to internal proprioceptive feedback (decreased muscle contraction to elicit conditioned stress responses) is speculative.

It is recognized that self-report questionnaires are limited in their statistical objectivity. No pre-post measures were included. The outcome questionnaire did not include any assessment of objective clinical outcomes or ratings from physicians or significant others. The results simply reflect the self-perceptions of the treated individuals. There is no method in the present study to correlate the degree of positive emotional change with the objective degree of improvement obtained with botulinum toxin treatment. A potential bias may be postulated since data was collected from patients who elected to return for additional botulinum toxin type A-1 treatment. However, the argument can be made that beauty and the opinion that ultimately matters lies in the eyes of the beholder.

Additional studies are clearly needed to better quantify which patients are likely to achieve the greatest benefits from treatment. The durability of these positive effects is also something that should be studied.

It would be interesting in a future study to identify patients who are depressed or distressed before botulinum toxin type A-1 treatment and ascertain whether their response to treatment is similar to those not depressed at baseline. Measurement of depression pre- and post-treatment would also provide interesting and useful data. It would also be interesting to explore the patient base who do not like the limitation of expressivity that can accompany botulinum toxin treatment, but are pleased with other cosmetic interventions, such as fillers, laser therapy, and intense pulsed light therapy.

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